AbstractID: 7258 Title: Computer-Aided Mass Detection on Digitized Mammograms Using Adaptive Thresholding and Fuzzy Entropy

Purpose: A segmentation method for detection of masses in digitized mammograms has been developed using two parallel approaches: adaptive thresholding method and fuzzy entropy feature as a CAD scheme.

Method and Materials: The algorithm consists of the following steps: a) Preprocessing of the digitized mammograms including identification of region of interest (ROI) as candidate for massive lesion through breast region extraction, b) Image enhancement using linear transformation and subtracting enhanced from the original image, c) Characterization of the ROI by extracting the fuzzy entropy feature, d) Local adaptive thresholding for segmentation of mass areas, e)Combine expert of the last two parallel approaches for mass detection.

Results: The proposed method was tested on 78 mammograms (30 normal & 48 cancerous) from the BI-RADS and local databases. The detected regions validated by comparing them with the radiologists' hand-sketched boundaries of real masses. The current algorithm can achieve a sensitivity of 87% with 1.57 FP/image.

Conclusions: This approach showed that the behavior of local adaptive thresholding and fuzzy entropy technique could be a useful method for mass detection on digitized mammograms. Our results suggest that the proposed method could help radiologists as a second reader in mammographic screening of masses.

Keywords: Breast Masses, Segmentation, Image Enhancement, local adaptive Thresholding, Fuzzy Entropy